# Comment on “Template for a Comment of the Progress in Earth and Planetary Science: an example” by Authors’name

Masaki Satoh1

Corresponding author

Email: AAAA@AAAAAAAA

Hodaka Kawahata2

Email: BBBB@BBBBBBBB

Ryuji Tada3

Email: CCCC@CCCCCCCC

Jun Matsumoto4

Email: DDDD@DDDDDDDD

(Institutional addresses)

1 Atmosphere and Ocean Research Institute, The University of Tokyo, 5-1-5 Kashiwanoha, Kashiwa, Chiba 277-8564, Japan

2 ,,,,,,,,,,

3 ,,,,,,,,,,

4 ,,,,,,,,,,

## Abstract

A short, unstructured, single paragraph summary, no more than 350 words, of the major points raised, making evident the key work highlighted in the article. Minimize the use of abbreviations and do not cite references in the abstract.

### Keywords

Three to ten keywords representing the main content of the article. Keywords should be separated by a comma (,) and a space as shown in the following example.

Computational seismology, Crustal structure, Finite-difference method simulation, Lg wave, Regional wave, Sn wave, Wave propagation

If a keyword includes a comma, place a semicolon (;) and a space between keywords as below.

Computational seismology; Crustal structure; Lg wave; Red, white and blue; Regional wave; Sn wave; Wave propagation

## 1 Main Text

This should briefly explain your views on article previously published in the journal and may also be broken into subsections with short, informative headings. The main text should not exceed 1,500 words.

### 1.1 Subsection ABC

This is a subsection in Main Text section.

### 1.2 Subsection DEF

This is a subsection in Main Text section.

## Abbreviations

CMB: Core-mantle boundary; GOSAT: Greenhouse Gases Observing Satellite; JAXA: Japan Aerospace eXploration Agency; TRMM: Tropical rainfall measuring mission

## Declarations

### Availability of data and material

All manuscripts must include an ‘Availability of data and materials’ statement. It should include information on where to find data supporting the results reported in the article.

For example:

The dataset(s) supporting the conclusions of this article is(are) available in the [repository name] repository, [unique persistent 　　　 　identifier and hyperlink to dataset(s) in http:// format].

The dataset(s) supporting the conclusions of this article is(are) included within the　article (and its additional file(s)).

If it is not possible to share research data publicly:

Data sharing not applicable to this article as no datasets were generated or analysed during the current study. Please contact author for data requests.

If your manuscript does not contain any data:

'Not applicable'

More examples of template data availability statements　are available at:

<https://progearthplanetsci.springeropen.com/submission-guidelines/preparing-your-manuscript/review>

### Competing interests

The authors declare that they have no competing interest.

### Funding

All sources of funding for the research reported should be declared.

This work was supported by JSPS KAKENHI Grant Number 12345678.

HK was partly funded by ABC project (ABC-123-456).

### Authors' contributions

The individual contributions of authors to the manuscript should be specified in this section. The authors should be referred to by their initials.

MS proposed the topic, conceived and designed the study. HK carried out the experimental study. RT analyzed the data and helped in their interpretation. JM collaborated with the corresponding author in the construction of manuscript. All authors read and approved the final manuscript.

### Authors' information

You may choose to use this section to include any relevant information about the author(s) that may aid the reader's interpretation of the article, and understand the standpoint of the author(s). This may include details about the authors' qualifications, current positions they hold at institutions or societies, or any other relevant background information. Please refer to authors using their initials. Note this section should not be used to describe any competing interests.

### Acknowledgements

This acknowledges anyone who contributed towards the article who does not meet the criteria for authorship including anyone who provided professional writing services or materials.

We thank XXXXX and YYYYY for their assistance in our experiments. We also thank ZZZZZ for the English language review. MS gratefully acknowledges the travel grant from Japan Geoscience Union to attend the ABC symposium 2015 held at Tokyo, Japan.

### Endnotes

## References

Citations in the reference list should include all named authors, up to the first 30 before adding 'et al.'. The reference list should be ordered alphabetically, by lead author's last name.

Article within a journal (30 authors or less)

Smith J, Jones M Jr, Houghton L (1999) Future of health insurance. N Engl J Med 965:325-329

Article within a journal (more than 30 authors)

McMullen MD, Kresovich S, Villeda HS, Bradbury P, Li H, Sun Q, Flint-Garcia S, Thornsberry J, Acharya C, Bottoms C, Brown P, Browne C, Eller M, Guill K, Harjes C, Kroon D, Lepak N, Mitchell SE, Peterson B, Pressoir G, Romero S, Oropeza Rosas M, Salvo S, Yates H, Hanson M, Jones E, Smith S, Glaubitz JC, Goodman M, Ware D, et al. (2009) Genetic properties of the maize nested association mapping population. Science 325:737-740

Article by DOI (with page numbers)

Slifka MK, Whitton JL (2000) Clinical implications of dysregulated cytokine production. J Mol Med 78:74-80. doi:10.1007/s001090000086.

Article by DOI (before issue publication and with page numbers)

Slifka MK, Whitton JL (2000) Clinical implications of dysregulated cytokine production. J Mol Med. doi:10.1007/s001090000086

Article in electronic journal by DOI (no paginated version)

Mysen B (2014) Water–melt interaction in hydrous magmatic systems at high temperature and pressure. Prog Earth Planet Sci 1:4. doi:10.1186/2197-4284-1-4

Journal issue with issue editor

Smith J (ed) (1998) Rodent genes. Mod Genomics J 14(6):126-233

Journal issue with no issue editor

Mod Genomics J (1998) Rodent genes. Mod Genomics J 14(6):126-233

Book chapter, or an article within a book

Brown B, Aaron M (2001) The politics of nature. In: Smith J (ed) The rise of modern genomics, 3rd edn. Wiley, New York

Complete book, authored

South J, Blass B (2001) The future of modern genomics. Blackwell, London

Complete book, edited

Smith J, Brown B (eds) (2001) The demise of modern genomics. Blackwell, London

Complete book, also showing a translated edition [Either edition may be listed first.]

Adorno TW (1966) Negative Dialektik. Suhrkamp, Frankfurt. English edition: Adorno TW (1973) Negative Dialectics (trans: Ashton EB). Routledge, London

Chapter in a book in a series without volume titles

Schmidt H (1989) Testing results. In: Hutzinger O (ed) Handbook of environmental chemistry, vol 2E. Springer, Heidelberg, p 111

Chapter in a book in a series with volume titles

Smith SE (1976) Neuromuscular blocking drugs in man. In: Zaimis E (ed) Neuromuscular junction. Handbook of experimental pharmacology, vol 42. Springer, Heidelberg, pp 593-660

Online First chapter in a series (without a volume designation but with a DOI)

Saito Y, Hyuga H (2007) Rate equation approaches to amplification of enantiomeric excess and chiral symmetry breaking. Topics in Current Chemistry. doi:10.1007/128\_2006\_108.

Proceedings as a book (in a series and subseries)

Zowghi D (1996) A framework for reasoning about requirements in evolution. In: Foo N, Goebel R (eds) PRICAI'96: topics in artificial intelligence. 4th Pacific Rim conference on artificial intelligence, Cairns, August 1996. Lecture notes in computer science (Lecture notes in artificial intelligence), vol 1114. Springer, Heidelberg, p 157

Article within conference proceedings with an editor (without a publisher)

Aaron M (1999) The future of genomics. In: Williams H (ed) Proceedings of the genomic researchers, Boston, 1999

Article within conference proceedings without an editor (without a publisher)

Chung S-T, Morris RL (1978) Isolation and characterization of plasmid deoxyribonucleic acid from Streptomyces fradiae. In: Abstracts of the 3rd international symposium on the genetics of industrial microorganisms, University of Wisconsin, Madison, 4-9 June 1978

Article presented at a conference

Chung S-T, Morris RL (1978) Isolation and characterization of plasmid deoxyribonucleic acid from Streptomyces fradiae. Paper presented at the 3rd international symposium on the genetics of industrial microorganisms, University of Wisconsin, Madison, 4-9 June 1978

Abstract presented at a Japan Geoscience Meeting

Kawahata H (2017) Current status and future development of Progress in Earth and Planetary Science. Abstract U01-08 presented at the JpGU-AGU Joint Meeting 2017, Makuhari, Japan, 20-25 May 2017. <https://confit.atlas.jp/guide/event/jpguagu2017/subject/U01-08/advanced>. Accessed 1 Sept 2017

Patent

Norman LO (1998) Lightning rods. US Patent 4,379,752, 9 Sept 1998

Dissertation

Trent JW (1975) Experimental acute renal failure. Dissertation, University of California

Book with institutional author

International Anatomical Nomenclature Committee (1966) Nomina anatomica. Excerpta Medica, Amsterdam

In press article

Major M (2007) Recent developments. In: Jones W (ed) Surgery today. Springer, Dordrecht (in press)

Online document

Doe J (1999) Title of subordinate document. In: The dictionary of substances and their effects. Royal Society of Chemistry. Available via DIALOG. http://www.rsc.org/dose/title of subordinate document. Accessed 15 Jan 1999

Online database

Healthwise Knowledgebase (1998) US Pharmacopeia, Rockville. http://www.healthwise.org. Accessed 21 Sept 1998

Supplementary material/private homepage

Doe J (2000) Title of supplementary material. http://www.privatehomepage.com. Accessed 22 Feb 2000

University site

Doe J (1999) Title of preprint. http://www.uni-heidelberg.de/mydata.html. Accessed 25 Dec 1999

FTP site

Doe J (1999) Trivial HTTP, RFC2169. ftp://ftp.isi.edu/in-notes/rfc2169.txt. Accessed 12 Nov 1999

Organization site

ISSN International Centre (2006) The ISSN register. http://www.issn.org. Accessed 20 Feb 2007

## Figure legends

Figures should be provided as separate files, not embedded in the text file.

The figure legends should be included in the main manuscript text file at the end of the document.

For each figure, the following information should be provided: Figure number (in sequence, using Arabic numerals - i.e. Figure 1, 2, 3 etc); short title of figure (maximum 15 words); detailed legend, up to 300 words.

Figure 1. Distributions of aerosol optical thickness and cloud droplet effective radius from the NICAM-SPRINTARS simulations. Global geographical distributions of (a, c) aerosol optical thickness and (b, d) cloud droplet effective radius from (c, d) the NICAM-SPRINTARS simulations in comparison to those obtained from (a, b) the MODIS satellite observations for 1 to 8 July 2006 (cited from Suzuki et al. 2008). The unit of cloud droplet effective radius is micrometers.

Figure 2. XXXXXXXXXXXX

Figure 3. YYYYYYYYYYYY

,,,,,,,,,,

,,,,,,,,,,

## Tables

Each table should be numbered and cited in sequence using Arabic numerals (i.e. Table 1, 2, 3 etc.). Tables should have a title (above the table) that summarizes the whole table; it should be no longer than 15 words. Detailed captions may then follow, but they should be concise. The title and any captions associated with each table should not be included in the main manuscript file, but be placed with the table in the relevant table file.

Even small tables that are integral to the manuscript should be uploaded as separate files, not embedded in the main manuscript file. These will be typeset and displayed in the final published form of the article.

Larger datasets or tables too wide for a portrait page should be uploaded separately as supplementary material files. These additional files will not be displayed in the final article, but a link will be provided to them in the published PDF.

１１８－５３

**1. Introduction**

The global activities of tropical storms (typhoons and hurricanes), which can drastically affect wetland and lake ecosystems, are gradually changing. Moreover, tropical storms disturb the community structures of aquatic plants in tropical and temperate regions (Wang et al., 2016). For example, hurricanes Katrina and Rita eroded the freshwater marshes of the Louisiana coastal wetlands in 2005 and caused significant uprooting (Howes et al., 2010). Many lakes in these regions are within the strike zones of tropical storms, and they experience high interseasonal and interannual variations in rainfall and runoff (Havens et al., 2016a). Havens et al. (2016a) reported the case of Lake Okeechobee and found that three hurricanes significantly reduced the coverage of submerged aquatic vegetation to one tenth and affected water quality and plankton dynamics in open water zones. Terrestrial loadings in periods of high rainfall could enhance dissolved color, reduce irradiance, increase water turnover rates that suppress blooms, and markedly alter the ecosystems in lakes located in regions where oceanic cycles and their teleconnections result in decadal variation in rainfall (Havens et al., 2016b). With model results predicting future warming of the tropical sea surface, the Intergovernmental Panel on Climate Change (IPCC, 2007) reported that tropical cyclones will become more intense, leading to more violent winds and rainfall.

Aquatic plants, particularly submerged macrophytes, play an important role in aquatic environments by positively interacting with the water quality and ecosystems of lakes. The submerged macrophytes in shallow eutrophic lakes can affect nutrient cycling, sediment–water interactions, water column irradiance, and phytoplankton blooms (Weisner et al., 1997). The vegetation of submerged macrophytes supplies a variety of ecosystem functions, providing shelters for fish and aquatic invertebrates, restoring water quality, and regulating the oxygen balance (Sood et al., 2012). Accordingly, recent studies have focused on the phytoremediation and purification effects of submerged macrophytes on nutrient-polluted water (e.g., Sood et al., 2012; Yanran et al., 2012; Dhote and Dixit, 2009), implying that coverage reductions of aquatic plants could negatively affect the water quality in shallow lakes. To understand water quality fluctuations, the physical processes of the vegetation coverage changes should be clarified; therefore, this study focuses on the processes in the short-term period that are as yet unexplained.

The ecosystem in a shallow lake can change drastically during the short-term approach of a storm coincident with the recession of aquatic plants. Ji et al. (2018) reported that a lake disturbed by tropical storms experienced a regime shift from clear to turbid water due to losing submerged vegetation. Heavy rainfall, flooding, and strong winds can also create suitable habitats for aquatic organisms and increase their diversity in regions frequently affected by typhoons (Wang et al., 2008).

To understand the short-term changes taking place within a lake ecosystem, we need to know the physical processes that induce the large-scale recession of aquatic plants; unfortunately, no analysis has been performed to reinforce this knowledge. Damage to aquatic plants varies based on the life forms of the species, geological habitat conditions, and tropical storm intensity (Wang et al., 2016). For example, tropical storms cause damage to mangroves, including the loss of foliage, breakage of trunks, and even uprooting of trees (Ellison, 1998). Heavy storms have induced a shift to a permanent turbid state by destroying vegetation (McKinnon and Mitchell, 1994). The most important potential impact of storms can be through their effect on water level fluctuations (Scheffer and van Nes, 2007). However, little is known about the process by which submerged macrophytes disappear during tropical storms. The issue of the recession processes of vegetation related to water level fluctuations is clearly far from resolved at short time scales, such as storm periods. This lack of knowledge exists because no biological data that would be useful for analyzing the disappearance of submerged macrophytes are available both before and after a typhoon strike.

As a consequence, a simulation coupled with flow and dynamical models on high-resolution grids is needed to analyze the dissipation of submerged macrophytes; in addition, observational data are needed to describe the loss of vegetation. The use of a high-resolution flow model can be a powerful approach for simulating the massive loss of submerged macrophytes. To date, various models have been proposed for simulating lake circulation (e.g., Akitomo et al., 2009), water temperature and the thermocline (e.g., Koue et al., 2018), dissolved oxygen (Kitazawa et al., 2010), primary production (Sato et al., 2011), and other features at seasonal and interannual time scales; nevertheless, the grid resolutions of these models are insufficient for representing the detailed flow field with a focus on submerged macrophytes. In this context, previous studies have proposed a theoretical framework and bulk models for the fluid force acting on submerged macrophytes (e.g., Luhar and Nepf, 2011; Hayashi and Konno, 2007). Fortunately, we succeeded in collecting the observational plant height data that are necessary for capturing the massive loss of submerged macrophytes by conducting echosounder surveying on a regular schedule.

This paper investigates the short-term, massive loss of submerged macrophytes as a result of the approach of a catastrophic super typhoon in Lake Biwa, Japan, which is taken as a pilot study area (Figure 1). To investigate the processes that caused the outflow of vegetation, we assume that the outflow can be attributed to the uprooting of submerged macrophytes induced by the erosion of the bed and fluid force acting on the vegetation body. Therefore, we proposed two dynamical models, namely, erosion and fluid force models, focusing on the habitats of the submerged macrophytes in the lake. In the first model, the outflow can be induced by erosion generated by a strong current or torrent (Figure 2a). In the second model, the outflow can be induced by the fluid force generated by the torrent (Figure 2b). Then, a numerical fluid simulation was coupled with an evaluation of the fluid force and erosion models to identify the key physical factors governing this massive loss. The erosion and fluid force may be influenced by wind waves and river runoff, which will be discussed in Section 5.　　１００２ word

刷り上がり

Express letter 5000 words　　Maximum including text figure and table.

Frontier letter no limit

Technical report no limitation